Canad. M. A. J.
June 4, 1960, vol. 82

# CLINICAL EXPERIENCE WITH TRIFLUOPERAZINE IN LOW-GRADE MENTAL DEFECTIVES

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THE CARE of mentally defective patients, especially in the lower grades of deficiency, frequently involves dealing with patterns of behaviour which are similar to, but not identical with, those of disturbed psychotics. Aggressiveness, destructiveness, self-abuse, noisiness, and overactivity occur commonly and, until the advent of the tranquillizing drugs, could be controlled only indifferently by sedatives or physical restraint.

At the Manitoba School, each of the new tranquillizers has been tried as it became available, beginning with reserpine, and all have proved valuable, to a greater or lesser extent, in controlling undesirable symptoms of low-grade defect and in eliminating the necessity for physical restraint or the administration of heavy doses of sedatives.

In assessing the problem of overactivity in its various forms, it has been possible to differentiate the chronic from the episodic or phasic type, and these differing symptomatologies have been found to be amenable to different therapeutic approaches. Unstable aments whose overactivity has been of a chronic and persistent nature have responded to treatment with orally administered tranquillizers, while those showing unpredictable, episodic, or phasic disturbances have usually been successfully controlled by the use of injectable forms.

Investigation of the effects of trifluoperazine dihydrochloride, a phenothiazine derivative, on the behaviour of mentally defective patients has been reported by Rudy *et al.*,[1] by Rettig, Caldwell and Josephs,[2] by Lawlis,[3] and by LeVann.[4] All found the drug to be effective in many cases where nursing care is complicated by disturbed behaviour of the types referred to above. The purpose of the present paper is to give the results of fairly widespread use of the drug in low-grade defectives whose behaviour-pattern is unstable.

Over the course of the past 18 months, extensive use has been made of trifluoperazine, using tablets, fluid concentrate and injectable forms. The drug was formally evaluated in 57 disturbed low-grade patients who evinced one or more of the target symptoms mentioned above. Of the total of 57 patients, 17 were considered to be episodically disturbed, while the remaining 40 were of the chronic type.

## DESCRIPTION OF PATIENTS

Thirty female and 27 male patients were studied. Ages ranged from eight to 49 years among the females, and six to 62 years among the males.

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TABLE I.—DIAGNOSIS—GRADE OF DEFECT

| | *Idiots* | *Imbeciles* | *Morons* | *Totals* |
|---|---|---|---|---|
| Males | 15 | 10 | 2 | 27 |
| Females | 13 | 16 | 1 | 30 |
| Totals | 28 | 26 | 3 | 57 |

Grades of defect for both males and females are shown in Table I. Three morons had organic complications which accounted for their disturbed behaviour—epileptic deterioration in one case, and epilepsy with psychosis in the other two.

## DIAGNOSIS

Fifteen cases were of the familial type without stigmata, while 18 cases were of the heavily stigmatized type sometimes referred to as oligoencephalic. The remaining cases included eight other conditions.

TABLE II.—DIAGNOSIS—ETIOLOGY

| | *Familial without stigmata* | *Familial with stigmata* | *Cerebral palsy* | *Diffuse brain injury* | *Mongolians* | *Epileptic amentia* |
|---|---|---|---|---|---|---|
| Males | 5 | 10 | 4 | 2 | 1 | 3 |
| Females | 10 | 8 | 4 | 3 | 1 | 2 |
| Totals | 15 | 18 | 8 | 5 | 2 | 5 |

| | *Oxycephaly* | *Retrolental fibroplasia* | *Severe infantile autism* | *Congenital word deafness* | *Totals* |
|---|---|---|---|---|---|
| Males | — | 1 | 1 | — | 27 |
| Females | 1 | — | — | 1 | 30 |
| Totals | 1 | 1 | 1 | 1 | 57 |

## TARGET SYMPTOMS

All patients in the group showed one or more of the following symptoms: destructiveness, self-abuse, noisiness, abusiveness (physical) towards other patients or staff members, and motor overactivity. In a test period of two weeks before the drug was commenced, all medications (except anticonvulsants) were discontinued, while the ward situation was observed to establish a general behaviour-level for each patient.

## DOSE RANGE AND METHODS OF ADMINISTRATION

In all adult patients who were given the drug orally, doses of 5 mg. thrice daily were administered initially. Some control of target symptoms usually became apparent within a week, such effect being often observed from one to four days after the first day of treatment. If no control was achieved in 10 days, the dose was doubled. In the face of continuing absence of response, the dose was raised to 20 mg. thrice daily. As soon as control of symptoms was achieved, the t.i.d. dosage was reduced to b.i.d. administration and maintained at that level unless the onset of side effects occasioned a further reduction in dosage. It was found that patients who did not respond to 20 mg. thrice daily developed such a degree of drowsiness that the drug had to be discontinued. Smaller or younger patients were

started on 1 or 2 mg. thrice daily, the dose being increased until control was achieved, then reduced to b.i.d. administration as in the case of the adults.

Patients whose disturbed behaviour was of an episodic or phasic type were placed on a p.r.n. (an "as required") injection of 2 mg., rising to 4 and then 6 mg. depending on response. Once the optimum dose was established, such cases usually responded to a single daily injection, although a few repeat doses were given in the early part of the series, before optimum dosage had been established for each patient.

## RESULTS

Of the 40 patients taking the oral form of trifluoperazine, four showed *no* response, or else developed such a degree of drowsiness that the drug had to be withdrawn. Nine patients showed a *fair* response, as evidenced by some diminution in frequency and/or severity of target symptoms. In 14 patients a *good* response was obtained, as evidenced by marked diminution in frequency and/or severity of target symptoms, and in 13 patients an *excellent* response, as evidenced by complete control of one or more target symptoms and marked diminution in frequency and/or severity of the remainder.

TABLE IIIA.—RESULTS—ORAL ADMINISTRATION

| | *Excellent* | *Good* | *Fair* | *Unimproved* | *Totals* |
|---|---|---|---|---|---|
| Males | 7 | 9 | 6 | 2 | 24 |
| Females | 6 | 5 | 3 | 2 | 16 |
| Totals | 13 | 14 | 9 | 4 | 40 |

Of the 17 patients treated with the injectable form of the drug, two were unimproved, three had a fair response, five a good response, and seven an excellent response in terms of degree of control of episodic target symptoms achieved by a single injection.

TABLE IIIB.—RESULTS—PARENTERAL ADMINISTRATION

| | *Excellent* | *Good* | *Fair* | *Unimproved* | *Totals* |
|---|---|---|---|---|---|
| Males | 1 | 1 | 1 | 0 | 3 |
| Females | 6 | 4 | 2 | 2 | 14 |
| Totals | 7 | 5 | 3 | 2 | 17 |

The effect of successful treatment of a number of low-grade defectives in any ward is a marked improvement in the general ward environment, and this, by diminishing the incidence of noisy and disturbing stimuli upon unstable patients, is reflected by a further improvement in behaviour.

## SIDE EFFECTS

Eighteen (45%) of the 40 patients treated with oral trifluoperazine developed side effects. Of these, five exhibited symptoms of extrapyramidal tract involvement, nine developed dystonic symptoms, two became transiently overactive, and two developed a marked degree of drowsiness. (The latter two patients were receiving a high dosage of the drug, and failed to respond therapeutically.) The extrapyramidal and dystonic side effects were encountered at widely variable times in the treatment period, some occurring during the first few days, some from one to two weeks, and some from four to six weeks after the commencement of treatment. As soon as these side effects were recognized, trifluoperazine was omitted for from 12 to 48 hours, and the patient was started on procyclidine in doses of 15 to 30 mg. daily. Trifluoperazine was resumed at half the dose, being given when the side effects appeared, as soon as the patient was clinically free of frank parkinsonism or dystonia. It was usually found possible to return to the optimum maintenance dosage level gradually without occasioning a return of side effects. A smaller incidence of side effects would probably have resulted from a dosage regimen involving a small initial dose and a slow increase in dose until control was achieved. This method of administration has now been adopted generally to control disturbed behaviour in low-grade patients. Two patients, however, because of a previously sullen, moody, and negativistic disposition, were continued on trifluoperazine in doses of 10 mg. twice daily for several days after the onset of parkinsonian rigidity and mask-like facies. As a result, their side effects persisted for three weeks after withdrawal of the drug, during which time they were receiving 30 mg. of procyclidine daily.

TABLE IV.—SIDE EFFECTS—ORAL ADMINISTRATION

| | *Extrapyramidal symptoms* | *Dystonia* | *Drowsiness* | *Overactivity* | *Totals* | *Total treated* |
|---|---|---|---|---|---|---|
| Males | 3 | 6 | 1 | 1 | 11 | 24 |
| Females | 2 | 3 | 1 | 1 | 7 | 16 |
| Totals | 5 | 9 | 2 | 2 | 18 | 40 |

Apart from the side effects mentioned above, no evidence of urinary abnormalities, blood dyscrasias, hypotension, skin rashes, or jaundice was found in any of the patients in the series.

Two of the 17 patients treated with injectable trifluoperazine had side effects of the dystonic type. In both cases, side effects occurred five to six hours after administration of the drug, persisting for two hours in one case and for four hours in the other. One case responded satisfactorily to reduction of dosage from 6 mg. to 4 mg., although there was a less effective control of overactivity at this dosage level than in the remaining patients at their optimum dose. In the other case, side effects recurred with all but the smallest doses, and the drug was withdrawn. This patient also reacted violently to the oral form of the drug, even in small doses. In the remaining 15 patients there were no side effects. In view of the relatively late onset of

side effects (five or six hours after injection), repeated daily doses of trifluoperazine were abandoned early in the series, and improved control was sought by adjustment of single dosage alone.

## CONCLUSIONS

Trifluoperazine appears to be a drug of choice for the control of destructive, self-abusive, noisy, abusive, and overactive behaviour in low-grade mental defectives. The oral form of the drug, administered in twice-daily maintenance doses, controls a high proportion of chronic symptoms of this type, while single injections can frequently be used to control the same symptoms when they occur episodically or phasically. Side effects are fairly common, but can be readily controlled by omitting the drug for 12 to 48 hours, with the concurrent administration of an anti-parkinsonian drug such as procyclidine in full adult dosage. By the methodical use of this drug, the use of physical restraint measures can be virtually abolished in an institutional setting. Trifluoperazine is effective over a wide range of conditions associated with mental deficiency, and is as effective in patients with cerebral palsy and diffuse brain injury as it is in stigmatized and unstigmatized familial defectives.

## SUMMARY

Trifluoperazine has been utilized effectively in controlling overactivity, abusiveness, self-abuse, noisiness, and destructiveness in 30 female and 27 male low-grade mental defectives. Methods of achieving optimum dosage have been described. The incidence of side effects and methods of dealing with them are reported. The use of the oral form in chronically disturbed patients, and of the injectable form, on an "as required" (p.r.n.) basis, in episodically or phasically disturbed patients is recommended.

I am indebted to Dr. H. S. Atkinson, Medical Superintendent, The Manitoba School, for permission to use the clinical material presented in this paper.

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## RÉSUMÉ

On a cherché à contrôler la suractivité, l'agressivité, l'onanisme, le tapage et les tendances destructives d'une collection de 57 idiots, imbéciles et débiles des deux sexes et d'âges divers. Après une période témoin de deux semaines au cours de laquelle toute médication (sauf les anticonvulsants) fut supprimée, on administra 5 mg. de trifluopérazine trois fois par jour *per os* aux adultes et 1 ou 2 mg. aux enfants. En absence d'amélioration, la dose fut augmentée au bout de 10 jours. On administra le médicament par injection chez 17 d'entre eux. Quatre des 40 malades traités oralement n'ont montré aucun effet ou alors devinrent si somnolents qu'on dut cesser le traitement; on obtint des résultats assez bons chez neuf malades de ce groupe, de bons résultats chez 14 et des résultats excellents chez 13. Les effets furent comparables chez ceux qui reçurent le médicament par injection. Des effets secondaires furent observés dans 45% des cas sous forme de manifestations extrapyramidales ou dystoniques qui disparurent avec la diminution de la dose ou l'administration d'antiparkinsoniens. L'auteur conclut que l'emploi, de trifluopérazine facilite considérablement la direction d'une salle d'agités et produit des effets même dans des cas de déficience mentale.

# AXILLARY ARM BLOCK WITH EMPHASIS ON ITS USE IN CHILDREN*

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THERE IS an awakening interest in the technique of anæsthetizing the brachial plexus at the lower margin of the axilla. This technique has been variously called upper arm block, axillary block or brachial block by the axillary route. This last term is confusing because the plexus may be blocked above the first rib by a long needle introduced through the axilla.

Axillary block was described by Accardo and Adriani[1] in 1949. Adriani mentioned the necessity for paræsthesia for successful block—in the little finger for ulnar nerve block; on the back of the hand for radial nerve block; at the elbow for musculocutaneous nerve block, and at the tip of the fingers for median nerve block. Although some anæsthetists have used this block for many years, it is likely that Clayton and Turner[2] can be thanked for the revival of interest in this technique.

Burnham reports his introduction to this block in *Current Comments in Anæsthesiology*. It is a happy coincidence that the preceding comment was concerned with an article by Betcher on hypno-induction techniques in pædiatric anæsthesia. These hypnotic techniques contribute to the success and delight in using the axillary block technique in children.[3, 4]

## TECHNIQUE

This has been excellently described and illustrated in drawings by Clayton and Turner,[2] Hudon and Jacques[5] and Burnham.[3]

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